

# NON-LINEAR SYMMETRIC SWEEP SPECTRAL-SPATIAL RF PULSES FOR MR SPECTROSCOPY AND IMAGING

## ABSTRACT OF THE DISCLOSURE

5           A method for designing non-linear phase  $180^\circ$  spectral-spatial radio frequency pulses that can be used for spectral editing in magnetic resonance spectroscopic imaging. A novel feature of the pulse is a symmetric sweep developed by the spectral profile from the outside edges of the spectral window towards the middle whereby coupled components are tipped simultaneously and over a short interval. Pulses have been designed for lactate editing at  
10 1.5T and 3T. The spectral and spatial spin-echo profiles of the RF pulses can be measured experimentally and altered in an iterative manner. Spectral-spatial radio frequency (SSRF) pulses allow simultaneous selection in both frequency and spatial domains. These pulses are particularly important for clinical and research magnetic resonance spectroscopy (MRS) applications for suppression of large water and lipid resonances.

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